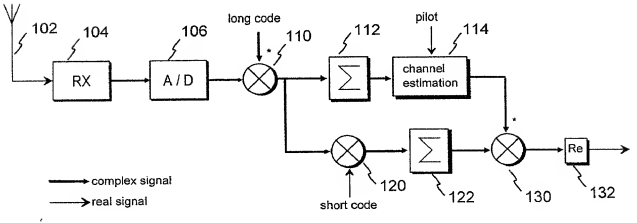

FIG. 1
PRIOR ART

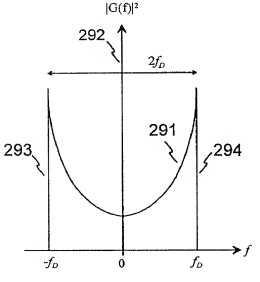

FIG. 2a

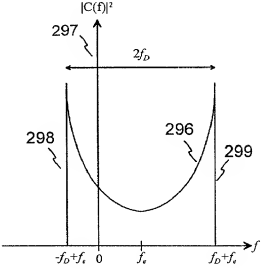

FIG. 2b

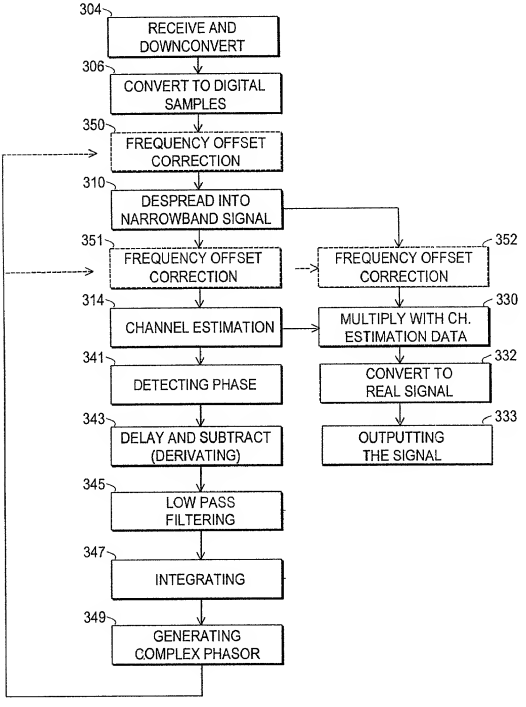
304
RECEIVE AND DOWNCONVERT
306
CONVERT TO DIGITAL SAMPLES
350
FREQUENCY OFFSET CORRECTION
310
DESPREAD INTO NARROWBAND SIGNAL
351
FREQUENCY OFFSET CORRECTION
352
FREQUENCY OFFSET CORRECTION
314
CHANNEL ESTIMATION
330
MULTIPLY WITH CH. ESTIMATION DATA
341
DETECTING PHASE
332
CONVERT TO REAL SIGNAL
343
DELAY AND SUBTRACT (DERIVATING)
333
OUTPUTTING THE SIGNAL
345
LOW PASS FILTERING
347
INTEGRATING
349
GENERATING COMPLEX PHASOR

FIG. 3

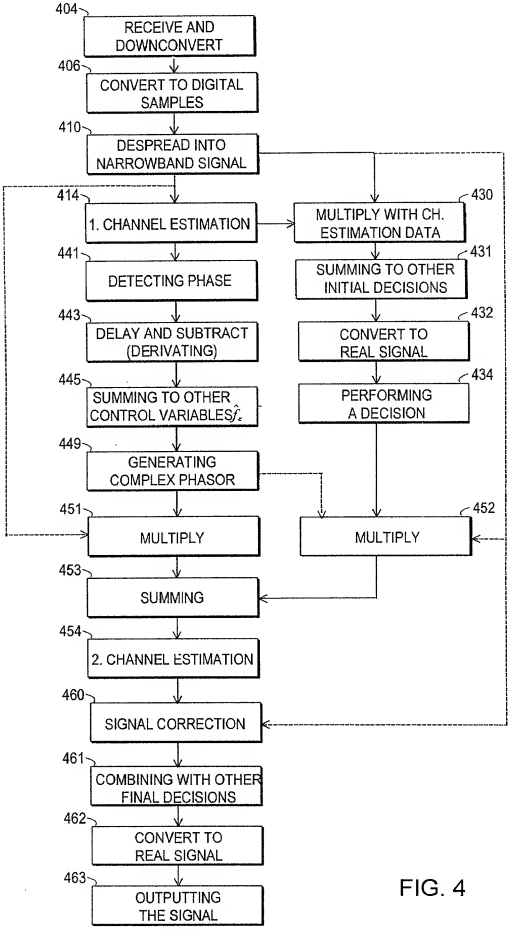
404
RECEIVE AND DOWNCONVERT
406
CONVERT TO DIGITAL SAMPLES
410
DESPREAD INTO NARROWBAND SIGNAL
414
1. CHANNEL ESTIMATION
430
MULTIPLY WITH CH. ESTIMATION DATA
441
DETECTING PHASE
431
SUMMING TO OTHER INITIAL DECISIONS
443
DELAY AND SUBTRACT (DERIVATING)
432
CONVERT TO REAL SIGNAL
445
SUMMING TO OTHER CONTROL VARIABLES
434
PERFORMING A DECISION
449
GENERATING COMPLEX PHASOR
451
MULTIPLY
452
MULTIPLY
453
SUMMING
454
2. CHANNEL ESTIMATION
460
SIGNAL CORRECTION
461
COMBINING WITH OTHER FINAL DECISIONS
462
CONVERT TO REAL SIGNAL
463
OUTPUTTING THE SIGNAL

FIG. 4

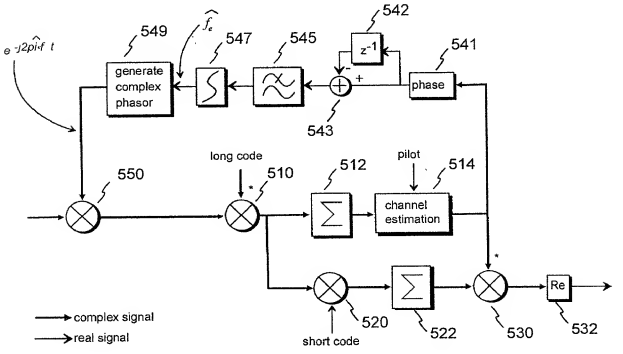
e -j2pi f t
549
$\hat{f}_e$
547
545
542
z-1
541
generate complex phasor
phase
543
long code
550
510
512
pilot
514
channel estimation
520
short code
522
530
Re
532
complex signal
real signal

FIG. 5

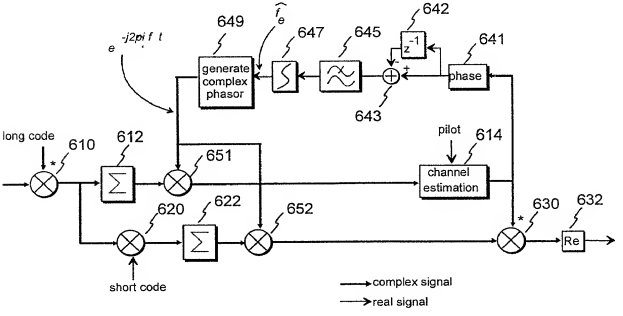
e -j2pi f t
649
$\hat{f}_e$
647
645
642
z-1
641
generate complex phasor
phase
643
long code
610
612
651
pilot
614
channel estimation
620
622
652
630
632
Re
short code
complex signal
real signal

FIG. 6

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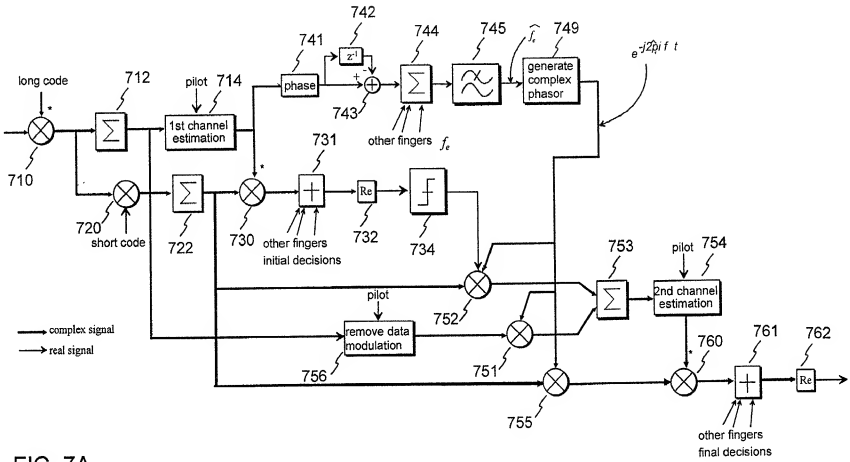

FIG. 7A

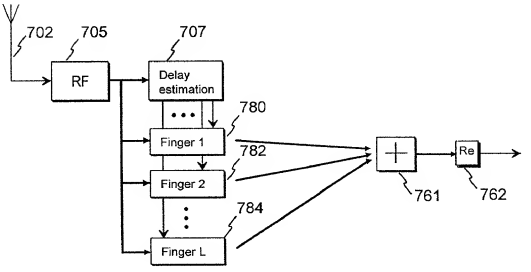

FIG. 7B

10070"4864984

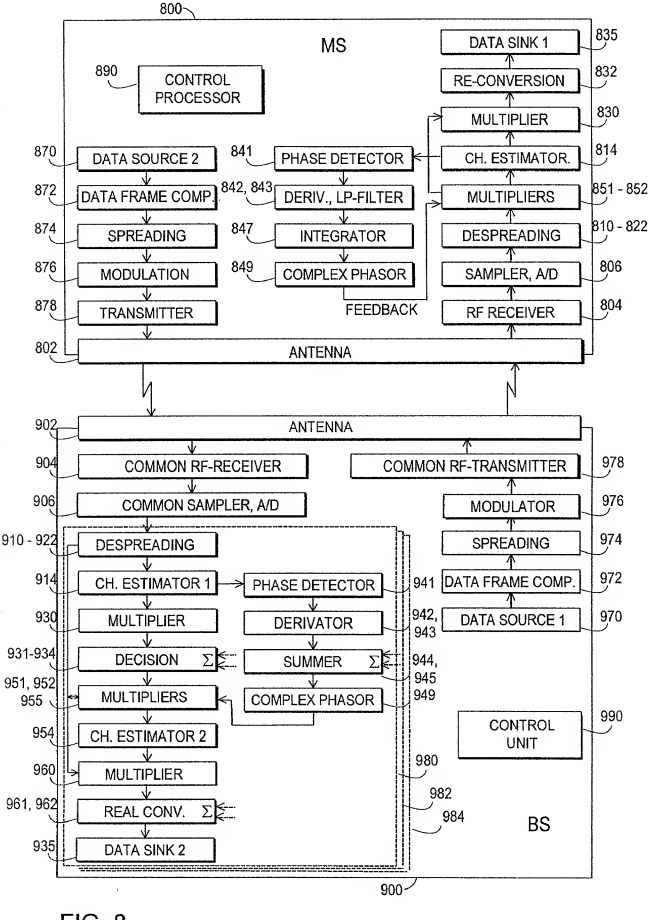
800
MS
890
CONTROL PROCESSOR
DATA SINK 1
835
RE-CONVERSION
832
MULTIPLIER
830
870
DATA SOURCE 2
841
PHASE DETECTOR
CH. ESTIMATOR.
814
872
DATA FRAME COMP.
842, 843
DERIV., LP-FILTER
MULTIPLIERS
851 - 852
874
SPREADING
847
INTEGRATOR
DESPREADING
810 - 822
876
MODULATION
849
COMPLEX PHASOR
SAMPLER, A/D
806
878
TRANSMITTER
FEEDBACK
RF RECEIVER
804
802
ANTENNA
902
ANTENNA
904
COMMON RF-RECEIVER
COMMON RF-TRANSMITTER
978
906
COMMON SAMPLER, A/D
MODULATOR
976
910 - 922
DESPREADING
SPREADING
974
914
CH. ESTIMATOR 1
PHASE DETECTOR
941
DATA FRAME COMP.
972
930
MULTIPLIER
DERIVATOR
942, 943
DATA SOURCE 1
970
931-934
DECISION Σ
SUMMER Σ
944, 945
951, 952
955
MULTIPLIERS
COMPLEX PHASOR
949
954
CH. ESTIMATOR 2
CONTROL UNIT
990
960
MULTIPLIER
980
961, 962
REAL CONV. Σ
982
984
935
DATA SINK 2
BS
900

FIG. 8